

Delayed hypersensitivity to methylchloroisothiazolinone/methylisothiazolinone not detected by the baseline series of the Spanish group

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A mixture of methylchloroisothiazolinone and methylisothiazolinone (MCI/MI), in a 3:1 ratio (1), has been used for over 20 years as a preservative in various products for personal, household, and industrial use.

In most baseline series, MCI/MI has been included for years at a concentration of 100 ppm aq. (2), which has been considered to be the optimum concentration required to detect the greatest number of cases of contact allergy to the preservative with the fewest number of false negative and irritant reactions. We describe a series of cases of allergy to MCI/MI that were only diagnosed with MCI/MI at a concentration of 200 ppm aq. and accounted for 24% of

our cases of allergic contact dermatitis caused by MCI/MI.

Material, Methods, and Results

We carried out a retrospective study of our patients who were patch tested between October 2006 and September 2008. Patients who were patch tested with at least the baseline Spanish series during this period were included; some patients of this group were also tested with a cosmetic series.

The clinical data recorded for each patient were: age, sex, occupation, site of lesions, series tested, positive allergens and number of positives, their relevance, and origin of sensitization, patient's diagnosis, and follow-up.

The allergens used in both the baseline series and the cosmetic series were from Chemotechnique Diagnostics® (Vellinge, Sweden) and were applied in Finn chambers® on Scanpor® tape and removed after 2 days. Readings were on D2 and D4 using ICDRG criteria. We did not include doubtful reactions.

The baseline series includes MCI/MI at a concentration of 100 ppm aq., whereas in the cosmetic series the concentration is 200 ppm aq. The baseline series was applied in 556 patients and the cosmetic series in 230; only these 230 patients were tested with the 100 and 200 ppm concentrations.

Of these 556 patients, 25 (4.49%) showed delayed hypersensitivity to MCI/MI. Of these 25 patients, 11 were tested with the baseline series and the cosmetic series and only 6 of these patients showed positivity to MCI/MI 200 ppm; 14 patients were tested only with the baseline series. Of the 25 cases, 6 (24%) showed positivity only to the cosmetic series and not to the standard series. The main characteristics of these six patients are shown in Table 1. There was an improvement or clinical cure in all our patients once they stopped using the cosmetic products involved.

Discussion

In our tested population, MCI/MI is the seventh most frequent cause of allergic contact eczema. This figure is similar to that found in the latest epidemiological study of the Spanish Investigation Group (4.04%) (3). This percentage is somewhat higher than that found by the North American Contact Dermatitis Group (2.7% of the population) and the German group (1.8%).

Conflicts of interest: 'The authors have declared no conflicts'.

Table 1. Main characteristics of the six patients allergic to methylchloroisothiazolinone/methylisothiazolinone 200 ppm aq.

	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Sex	Female	Female	Female	Female	Male	Female
Age (years)	44	61	46	56	46	41
Distribution	Widespread	Hand	Face (eyelids)	Widespread	Widespread	Hand
Occupation	Beautician	Housewife	Health worker	Housewife	Driver	Domestic
Cosmetic product	Gel	Hand cleanser	Shampoo	Gel	Gel	Hand cleanser

The concentration of MCI/MI is restricted in both rinse-off and leave-on products because of its sensitising capacity. In the European Union, the concentration allowed is 15 ppm for rinse-off and leave-on products (4), whereas in the United States, a concentration of 7.5 ppm is permitted in leave-on and 15 ppm in rinse-off products. In some countries such as Japan, its use in rinse-off products is permitted, but not in leave-on products. Cases of allergic contact dermatitis caused by both types of products have been found, although some authors such as Fewings and Menné claim that the risk of sensitization and elicitation of eczema in the case of rinse-off products is very low under normal conditions (1). However, in all our patients the product causing the allergic condition was a rinse-off product, and all patients improved once its use was discontinued.

Although MCI/MI is included in the baseline series at a concentration of 100 ppm aq., the ideal concentration required for studying allergies to this compound has not been agreed on because, according to Björkner et al., at a concentration of 100 ppm, 50% of cases are not diagnosed (5). Whether a concentration of 200 ppm diagnoses more cases than 100 ppm is controversial. In a study performed by Fewings and Menné, the two concentrations were compared and the frequency of positive results at a concentration of 200 ppm was found to be no greater, although the number of doubtful results was higher (6). However, another study by Färm et al. found more cases diagnosed with a concentration of 200 ppm (7).

In a recent study carried out in United Kingdom, the authors missed 46% of the cases when they tested MCI/MI 100 ppm and did not find any irritant reactions when they tested 200 ppm concentration (8).

In some countries such as Sweden, MCI/MI is included in the baseline series at a concentration of 200 ppm (9). Patches with a concentration of 300 ppm are known to produce

more positive reactions, although the risk of sensitization is also higher (5).

In the TRUE TestTM, MCI/MI was used at a concentration equivalent to 150 ppm. When the results of the TRUE TestTM were compared with those obtained using the baseline series, more cases of positivity with the former were found (10). In our series of cases, the TRUE TestTM had been applied previously to one of our patients with negative results.

In our study, 24% of the cases were detected only with a concentration of 200 ppm in the cosmetic series. We therefore believe that it would be useful to consider including MCI/MI at this concentration in the baseline series, thus enabling a greater number of cases to be diagnosed.

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